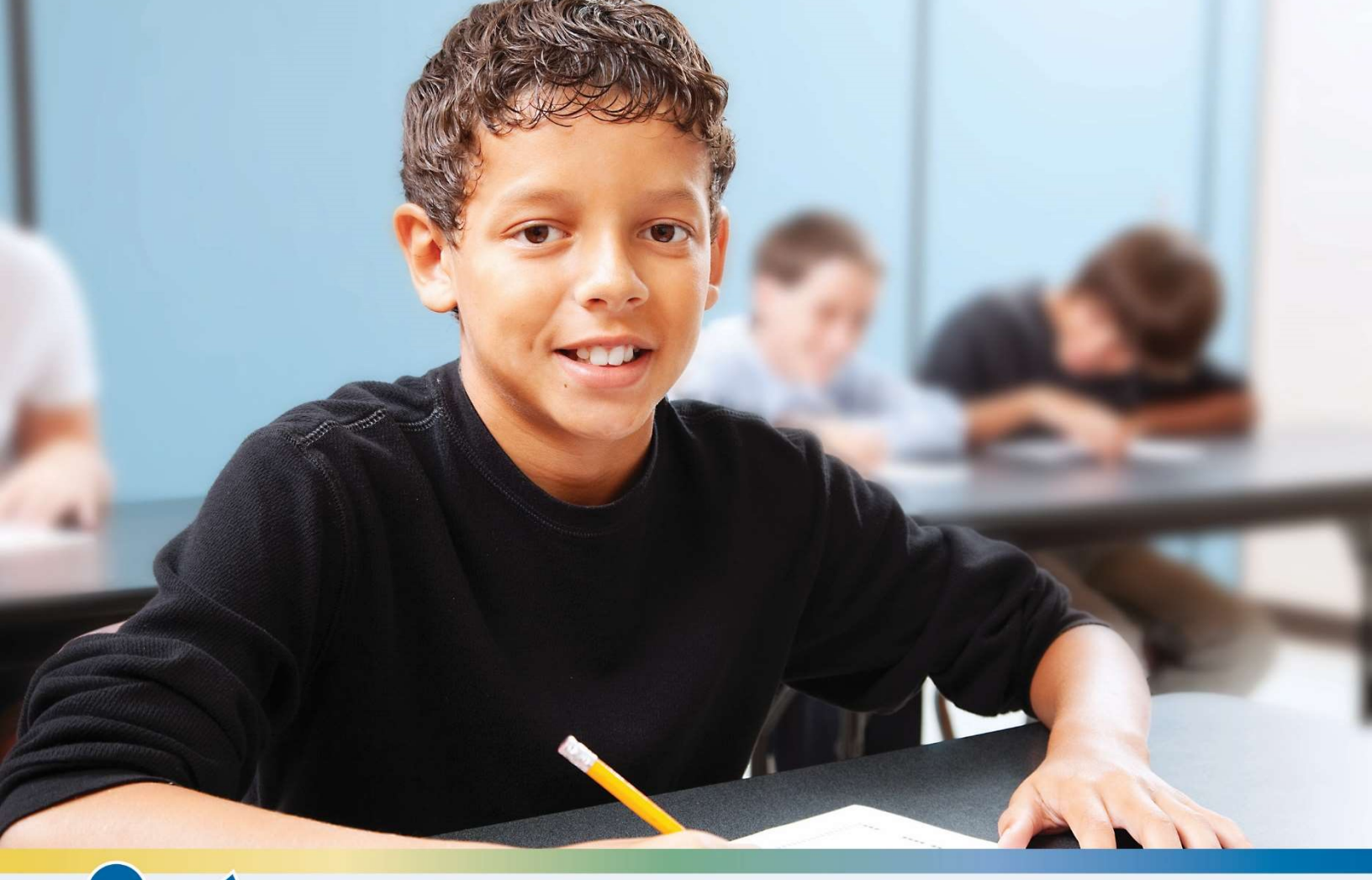

PREP

The Personal Responsibility Education Program Evaluation

Focusing on the Boys:

The Longer-Term Impacts of *Wise Guys* in Davenport, Iowa

OPRE Report Number 2019-97

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Focusing on the Boys: The Longer-Term Impacts of *Wise Guys* in Davenport, Iowa

September 2019

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CONTENTS

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TABLES

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Overview

Boys report higher rates of sexual risk behaviors than girls do (Centers for Disease Control and Prevention 2018; Martinez and Abma 2015). In addition, early fatherhood can have negative effects on the outcomes of young men. Becoming a parent at a young age reduces the number of years of schooling young men receive, as well as their likelihood of graduating from high school (Fletcher and Wolfe 2012). Despite these risks, relatively little adolescent pregnancy prevention research or programming focuses specifically on boys.

Recognizing the need for research on programs designed to support adolescent males, the Administration for Children & Families within the U.S. Department of Health and Human Services funded Mathematica Policy Research to rigorously evaluate the *Wise Guys Male Responsibility Curriculum* in middle schools in and near the city of Davenport, Iowa. In 2011, the Iowa Department of Public Health used federal funding from the Personal Responsibility Education Program (PREP) to support three community-based agencies to implement *Wise Guys* in three Iowa counties. For this study, Mathematica partnered with one of these agencies—Bethany for Children & Families—to rigorously evaluate *Wise Guys* with 7th-grade boys in seven Davenport middle schools. The study is part of a broader national evaluation of PREP that Mathematica is conducting for ACF (Wood et al. 2015).

To test the effectiveness of *Wise Guys* in Davenport middle schools, the study team used a random assignment evaluation design. Boys assigned to the treatment group could attend the *Wise Guys* sessions during the regular school day as an elective supplement to the regular school curriculum. Boys assigned to the control group could not attend *Wise Guys* but continued to receive the sexuality and reproductive health education provided as part of the regular school curriculum. The study team enrolled and randomly assigned a total of 736 boys over three consecutive school years, from 2013–2014 to 2015–2016. Boys in both research groups completed a baseline survey upon enrolling in the study and follow-up surveys one and two years later. Data from the two-year survey are the focus of this report.

This report is the last in a series on the implementation and impacts of *Wise Guys* in Iowa. It presents evidence on the program's longer-term impacts, provides information on program costs and documents the study methods. An earlier report on the program's shorter-term impacts after one year showed that *Wise Guys* boys had better knowledge of contraception and sexually transmitted infections (STIs), and expressed greater support when asked about the importance of condom use among sexually active youth (Goesling et al. 2017). Relative to the regular sex education curriculum, the program did not change boys' risk of sexual initiation, intentions to have sex, relationship attitudes, goal-setting abilities, or communication skills after one year.

The longer-term impact findings presented in this report show that *Wise Guys* in Davenport did not reduce the likelihood of sexual initiation during the study's two-year follow-up period. The program did, however, have positive effects on knowledge of contraception and STIs, attitudes toward condom use, and motivation to avoid getting someone pregnant.

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Introduction

Boys report higher rates of sexual risk behaviors than girls do. They engage in sexual behavior at an earlier age and report having more sexual partners (Centers for Disease Control and Prevention 2018; Martinez and Abma 2015). In addition, early fatherhood can have negative effects on the outcomes of young men. Becoming a parent at a young age reduces the number of years of schooling young men receive, as well as their likelihood of graduating from high school (Fletcher and Wolfe 2012). Despite these risks, relatively little adolescent pregnancy prevention research or programming focuses specifically on boys.

Recognizing the need for research on programs designed to support adolescent males, the Administration for Children & Families (ACF) within the U.S. Department of Health and Human Services (HHS) funded Mathematica Policy Research to rigorously evaluate the *Wise Guys Male Responsibility Curriculum*. Intended for adolescent males ages 11 to 17, *Wise Guys* is one of only a few teen pregnancy prevention curricula designed specifically for adolescent males. It aims to help boys make responsible decisions about their sexual behavior and ultimately avoid early entry into fatherhood. In 2011, the Iowa Department of Public Health used federal funding from the Personal Responsibility Education Program (PREP) to support the implementation of *Wise Guys* by community-based agencies in three Iowa counties. For this study, Mathematica partnered with one of these agencies—Bethany for Children & Families—to rigorously evaluate *Wise Guys* in middle schools in and near the city of Davenport, Iowa. This implementation of *Wise Guys* was designed to supplement the sex education that boys were receiving in their health education or science classes. The evaluation of *Wise Guys* in Davenport-area middle schools is part of a broader national evaluation of PREP that Mathematica is conducting for ACF (Wood et al. 2015).

This report is the last in a series on the implementation and impacts of the *Wise Guys* curriculum as implemented in Iowa. It presents evidence on the program's impacts after two years. It also provides information on program costs and documents the study methods. An earlier report presented evidence on the program's impacts after one year (Goesling et al. 2017). That report found that boys in the *Wise Guys* group had greater exposure to information on healthy relationships and reproductive health topics, knew more about contraception and sexually transmitted infections (STIs), and expressed more support when asked about the importance of condom use among sexually active youth. This report builds on the earlier report by examining whether earlier impacts persisted or new impacts emerged at the two-year follow-up, when the boys were expected to be in 9th grade.

The *Wise Guys* curriculum

Wise Guys is a long-standing, widely implemented curriculum designed to help adolescent males make responsible decisions about their sexual behavior and avoid early entry into fatherhood by promoting male responsibility (Family Life Council 2011). In 1990, with a grant from the state of North Carolina, the Family Life Council of Greater Greensboro, North Carolina, developed the curriculum and offered it on a volunteer basis to middle-school age males at a Greensboro Boys and Girls Club (Gruchow and Brown 2011). Since then, the curriculum has been periodically updated and implemented in more than 350 communities in 32 states. Currently, the Children's Home Society of North Carolina, which merged with the Family Life Council, distributes the *Wise Guys* curriculum.

The current version of the curriculum includes 10 sessions. In each session, trained facilitators lead a series of scripted activities and group discussions with groups of up to 25 boys. Facilitators pick the specific activities and discussion topics from a list specified in the curriculum materials. The curriculum distributor recommends delivering the sessions for 45 to 60 minutes each over 5 to 12 weeks. The facilitators can deliver sessions either in school as part of the regular school day or in an after-school program or other community-based settings. The use of male-only participant groups aims in part to create an environment in which boys feel comfortable sharing information and asking questions about potentially sensitive personal topics. The adult facilitators can be either male or female.

The curriculum sessions cover a broad range of topics. *Wise Guys* provides factual information on human sexuality, pregnancy, and the transmission of STIs. For example, a session on sexuality provides information on puberty and the physical changes that occur during adolescence, focusing specifically on male physical development. The program also covers topics related to both abstinence and contraception. The curriculum teaches that abstinence is the most effective way to prevent pregnancy and STIs. It also provides information on condoms and other contraceptives. Other *Wise Guys* sessions address broader adolescent development topics, such as setting goals, communication skills, healthy relationships, and identifying personal values and beliefs. In addressing these topics, the curriculum emphasizes the theme of male responsibility and encourages boys to view male strength as resulting from personal character, values, and wise decision making rather than physical traits.

Evaluating *Wise Guys* in Iowa

Although *Wise Guys* is a widely implemented curriculum, there are few rigorous studies on the effectiveness of the program. An earlier study by Gruchow and Brown (2011) examined the impacts of *Wise Guys* among middle school students in Guilford County, North Carolina. The study found some evidence of favorable program effects, particularly on measures of boys' knowledge and attitudes. However, the study's relatively small sample size and high rate of sample attrition weakened the quality of its causal evidence. Some earlier studies have compared the outcomes of boys enrolled in *Wise Guys* before and after they participated in the program (Herrman et al. 2016; Herrman et al. 2017). Other research has estimated the effects of *Wise Guys* by comparing *Wise Guys* participants to students in other schools where the program was not offered (Gottsegen and Philliber 2001). Since the research groups in this study were not created through random assignment, initial differences in the groups may have led to differences in their outcomes, making a comparison of their outcomes an unreliable measure of program effects. Although these studies might provide suggestive evidence of potential program effects, more rigorous evidence on the impact of *Wise Guys* is needed.

To provide this rigorous evidence of the potential effects of *Wise Guys*, Mathematica collaborated with staff from the Iowa Department of Public Health and Bethany for Children & Families to conduct a rigorous random assignment evaluation of the program as implemented in seven middle schools in and near Davenport, Iowa. Five of the seven schools were located within Davenport city limits. Two other schools were located in more rural areas just outside the city. Although the school district did not have specific requirements for schools to provide education on sexuality or reproductive health, the schools all had a history of providing at least some education on these topics, typically as part of a required science or health class (Kisker and

Murphy 2016). Four of the seven study schools taught sex education during 7th-grade health class; two schools taught it in 8th-grade science or health class; and one school offered it in 6th through 8th grade (Kisker and Murphy 2016). The number of sex-education sessions offered ranged from 2 to 20 sessions (Kisker and Murphy 2016). Therefore, by the time students finished 8th grade, they would have had exposure to some sex education even if *Wise Guys* had not been offered.

Bethany saw *Wise Guys* as an opportunity to supplement the regular school curriculum with a voluntary, elective class designed specifically for boys. Bethany planned to offer the program during the regular school day to help ensure that boys could regularly attend the *Wise Guys* sessions. Some schools planned to offer *Wise Guys* during an elective or free period, while others planned to pull students from their regularly scheduled classes to attend. To minimize the number of times a student missed any given class period, the schools planned to vary the time of the *Wise Guys* classes from week to week. For example, in one school, a school counselor set up a rotating schedule at the start of each semester and shared the planned schedule with the relevant teachers. In another school, a school counselor informed teachers of the *Wise Guys* schedule at the start of each week and helped pull students from their classes at the designated times. In addition, Bethany wanted each class to include a mix of higher- and lower-risk boys. Staff felt that having such a mix would improve the quality of the group interactions, as lower-risk boys could model behavior for those at higher risk. To help achieve this desired mix of students, Bethany planned to work with school staff to ensure that a mix of higher- and lower-risk boys enrolled in the program.

As described in an earlier process study report (Kisker and Murphy 2016), Bethany made three planned adaptations to the standard *Wise Guys* curriculum. First, to meet federal grant requirements for the PREP funding, the Iowa Department of Public Health provided all PREP-funded agencies in the state with three supplemental adulthood preparation sessions on healthy life skills, adolescent development, and healthy relationships. Bethany added these supplemental sessions to the standard *Wise Guys* curriculum. Second, Bethany changed the order of the *Wise Guys* session on dating violence so that it occurred immediately before the supplemental session on healthy relationships. Both the Iowa Department of Public Health and the *Wise Guys* curriculum distributor approved of this change. Third, although not required by the grant, Bethany added a celebration session to the end of the program to recap key messages and recognize boys for completing the program.

With these planned adaptations, the resulting program had 14 sessions, each designed to cover a 40- to 60-minute class period (Table 1). In each school, Bethany planned to deliver the sessions on average once a week for 14 weeks. This schedule enabled Bethany to deliver the full program in each school up to twice per year—once in the fall semester and again in the spring.

Table 1. Overview of planned *Wise Guys* sessions

Session	Objectives
Orientation, myself	Set expectations for the program and explore issues of self-esteem and confidence
Personal and family values	Help participants articulate and identify influences on their personal values
Communication and masculinity	Identify and practice effective communication skills; discuss the concept of *masculinity* and what it means to be a male
Sexuality	Provide information on the physical changes that occur during puberty; discuss the meaning of *sexuality*
Abstinence and contraceptives	Discuss abstinence as the only risk-free method of staying safe; identify the advantages and disadvantages of other contraceptive methods
Sexually transmitted infections (STIs)	Provide information on types of STIs and how they are transmitted
Goal setting	Introduce the importance of setting goals and discuss how unintended pregnancy and STIs can alter life plans
Decision making	Identify and practice effective decision-making skills
Parenthood	Identify the roles and responsibilities of fatherhood and how having a baby can affect a teen's life
Stress and mental health[a]	Discuss how stress can affect mental health and how to effectively manage stress
Dating violence	Identify and discuss the signs and risks of dating violence and unhealthy relationships
Healthy relationships[a]	Identify the features of healthy relationships and discuss how to achieve them
Social media[a]	Discuss the risks of social media and how to stay safe
Celebration	Review highlights of the program and recognize youth for participating

[a] Sessions supplemental to *Wise Guys* supplied by the Iowa Department of Public Health.

Evaluation design

To test the effectiveness of Bethany's implementation of *Wise Guys* in Davenport middle schools, the study team used a random assignment evaluation design. Boys assigned to the treatment group could attend the *Wise Guys* sessions as an elective supplement to the regular school curriculum. Boys assigned to the control group could not attend *Wise Guys* but continued to receive the sexuality and reproductive health education provided as part of the regular school curriculum. Boys in both research groups completed a baseline survey upon enrolling in the study, as well as two follow-up surveys administered one and two years after completing the baseline survey. Because the boys were assigned to the two research groups at random, any difference in outcomes between the two groups represents an unbiased estimate of the effect of adding *Wise Guys* as a supplement to the regular school curriculum. The study findings pertain specifically to boys in Davenport middle schools, who might differ from boys in other areas of Iowa or in other states. The study team did not seek to test the generalizability of the study findings beyond the seven participating middle schools.

Recruitment for the study occurred over three consecutive school years from 2013–2014 to 2015–2016. Bethany was responsible for recruiting boys for the study. Bethany had initially planned to serve a mix of 7th-grade students in some schools and 8th-grade students in others. To standardize the recruiting process across schools, the study team asked Bethany to recruit only 7th-grade students. To enroll in the study, boys had to receive written permission from a

parent or guardian and complete a baseline survey. The study team worked with Bethany and school staff to distribute and collect permission forms and administer baseline surveys at the start of each semester.

The study team designed the random assignment procedures to fit with Bethany's plans for implementing the program. For each school, the study team conducted random assignment either once or twice per academic year, depending on the school's enrollment and the number of students interested in the program. A first round of random assignment occurred in September of each year to select the boys offered *Wise Guys* in the fall semester. For schools with a sufficient number of interested students, a second round of random assignment occurred in January of each year to select a different group of boys offered *Wise Guys* in spring semester. Over three-quarters of study participants enrolled in the fall semester. To help ensure that each *Wise Guys* group had Bethany's desired mix of higher- and lower-risk students, the study team asked Bethany staff and school counselors to assign students to into risk categories before each round of random assignment. Counselors did not use a formal metric for these risk designations, but instead used their own judgment to assess students' level of risk. Whenever possible, the study team accounted for these risk categories when conducting random assignment, by selecting students for the treatment group from each of the risk categories. Across both research groups, 29 percent of sample members had been designated as higher risk by school staff.

The study team administered the baseline surveys and most of the follow-up surveys in school during the regular school day. The team designed the surveys as self-administered paper-and-pencil questionnaires that students could complete individually in their classrooms. To reach students who had moved or were otherwise unavailable to complete the survey in school, the team administered a small portion of surveys by telephone. For the two-year follow-up survey on which this report is based, 6 percent of completions were by telephone. Using these methods, the study team achieved response rates for the two-year follow-up survey of 89 percent for the treatment group and 91 percent for the control group.

Over a three-year period, Bethany enrolled 736 boys in the study and delivered *Wise Guys* to 31 groups of study students. The study sample represented about 40 percent of all 7th-grade boys in the study schools during this period (Kisker and Murphy 2016). The study team randomly assigned 417 boys (57 percent) to the treatment group and 319 boys (43 percent) to the control group. To ensure an adequate number of boys for each *Wise Guys* session, the study team varied the random assignment ratio as needed. The analysis accounts for this variation in the random assignment ratio. The appendix to this report contains additional details on the study enrollment and random assignment procedures.

The boys recruited for the study were racially diverse and relatively disadvantaged (Table 2). About half were non-Hispanic whites (51 percent). The others were Hispanic (22 percent), African American (14 percent), or some other racial category (13 percent). Slightly less than half the boys (48 percent) reported living with both biological parents, compared with 66 percent among all children ages 12 to 17 nationally (U.S. Census Bureau 2014). At the time of the study, 56 percent of students in the study schools were eligible for free or reduced-price lunch, compared with about half of all middle school students nationwide. All the boys were in 7th grade when they enrolled in the study.

At the time of study enrollment, the boys reported that they had limited exposure to information on reproductive health topics and limited knowledge of the effectiveness of contraceptive methods (Table 2). About one in five students (19 percent) reported having had a class on STIs in the past year. Fewer students reported having had a class on abstinence (13 percent); relationships, dating, or marriage (12 percent); methods of birth control (11 percent); or where to get birth control (5 percent). When asked a series of four knowledge questions about the effectiveness of condoms and birth control pills in reducing the risk of pregnancy and human immunodeficiency virus (HIV), no more than 34 percent of the boys answered any one question correctly.

Consistent with their young age, the boys reported that they had limited involvement in sexual activity and other risk behaviors at the time of study enrollment. Only 5 percent reported having ever had sexual intercourse, a rate in line with the national average for this age group (Finer and Philbin 2013). Few boys reported smoking cigarettes (3 percent), drinking alcohol (4 percent), or using marijuana (2 percent) in the past 30 days, rates that are similar to figures for 7th graders nationally (Brooks-Russell et al. 2014). About one in four boys (26 percent) said they were currently in a dating relationship.

Table 2. Student characteristics at baseline

Measure	Percentage
Demographics	
Age	
12 or younger	80
13 or older	20
Race or ethnicity	
White, non-Hispanic	51
African American, non-Hispanic	14
Hispanic	22
Other	13
Identified as high risk by school counselors	29
Family relationships	
Lives with both biological parents most or all of the time	48
Talked with mother or father in the past three months about:	
Schoolwork or grades	94
A personal problem	61
Avoiding drugs or alcohol	52
Romantic relationships or dating	47
Whether you should have sex at this time in your life	24
How to resist pressure to have sex	18
Information and knowledge	
Attended a class in the prior year on:	
Sexually transmitted infections (STIs)	19
Abstinence	13
Relationships, dating, or marriage	12
Methods of birth control	11
Where to get birth control	5
Correctly answered knowledge question on:	
Condoms and risk of pregnancy	34
Condoms and risk of getting human immunodeficiency virus (HIV)	28
Birth control pills and risk of pregnancy	27
Birth control pills and risk of getting HIV	13

TABLE 2 (CONTINUED)

Measure	Percentage
Romantic relationships and risk behaviors	
Currently in a dating relationship	26
Ever had sexual intercourse	5
Smoked in past 30 days	3
Drank alcohol in past 30 days	4
Used marijuana in past 30 days	2
Sample size	**736**

Source: Baseline survey conducted by Mathematica Policy Research

The study team used data from the two-year follow-up survey to measure program impacts on 11 primary outcomes (Table 3). We examined these same 11 outcomes in the impact analysis of the one-year follow-up data (Goesling et al. 2018). Therefore, we can examine how the impacts on these measures have changed over time. Before conducting the analysis, the team designated one of these outcomes, ever had sexual intercourse, as the study's confirmatory outcome—meaning that whether the program has an impact on that outcome represents the study's central test of overall effectiveness (Wood et al. 2015). Based on 9th-grade data from the 2011 Iowa Youth Risk Behavior Survey, the study team assumed that 23 percent of boys in the control group would have had sex by the time of the two-year follow-up survey (Wood et al. 2015). On the basis of this assumption and a projected sample size of 800 boys, the study would be able to detect a reduction in the rate of sexual initiation of about seven percentage points. In other words, if *Wise Guys* reduced the rate of sexual initiation by seven percentage points or more, the team would likely be able to conclude that the effect was too large to be due to chance.

Table 3. Outcome measures

Domain and outcome	Definition
Delayed sexual initiation	
Ever had sexual intercourse	Binary variable: equals 1 if student reported ever having had vaginal intercourse; equals 0 if student reported never having had vaginal intercourse.
Knowledge	
Knowledge of contraception and STIs	Index variable: sum of correct responses to 10 knowledge questions such as, "If condoms are used correctly and consistently, how much can they decrease the risk of pregnancy?" and "Can a woman give HIV to a man if they are having sexual intercourse without a condom?" Questions were adapted from Goldstein et al. (2010) and Trenholm et al. (2007); values on the index range from 0 to 10, with higher values indicating greater knowledge.
Attitudes	
Support for abstinence	Multiple-item scale variable: average of responses to four survey questions; each question asked students to report their level of agreement with a statement such as "At your age right now, having sex would create problems" or "Having sex is a good thing for you to do at your age." Questions were adapted from Smith et al. (2012); values on the scale range from 1 to 4, with higher values indicating greater support for abstinence.

TABLE 3 (CONTINUED)

Domain and outcome	Definition
Support for condom use	Multiple-item scale variable; average of responses to two survey questions that asked students to report their level of agreement with the following two statements: (1) "Condoms should always be used if a person your age has sex" and (2) "Condoms are important to make sex safer." Questions were adapted from Smith et al. (2012); values on the scale range from 1 to 5, with higher values indicating greater support for condom use among sexually active youth.
Motivation and intentions	
Motivation to avoid teen pregnancy	Single-item scale variable indicating how the respondent would feel if he got someone pregnant; values on the scale range from 1 (very happy) to 5 (very upset), with higher values indicating greater motivation to avoid teen pregnancy.
Intentions to have sexual intercourse	Binary variable: equals 1 if student reported intentions to have sexual intercourse in the next year; equals 0 if student did not report intentions to have sexual intercourse in the next year.
Relationship attitudes	
Support for respect in romantic relationships	Single-item scale variable indicating the level of agreement with the following statement: "A good dating relationship is based on mutual respect, not just sex." Values on the scale range from 1 to 4, with higher numbers reflecting more agreement with the statement.
Disapproval of dating violence	Single-item scale variable indicating the level of disapproval with the following statement: "There are times when hitting or pushing between people who are dating is okay." The question was adapted from Foshee et al. (1992); values on the scale range from 1 to 4, with higher numbers reflecting greater disapproval.
Goal setting	
Goals and plans for future career	Multiple-item scale variable; average of responses to the following two survey questions: (1) "I have specific goals for my future career" and (2) "I have a plan for achieving my future career goals." Questions were adapted from Carson and Bedeian (1994) and Diemer and Blustein (2007); values on the scale range from 1 to 4, with higher values indicating greater perceived confidence in goals set to obtain a future career.
Communication skills	
Communication with parents	Multiple-item scale variable: average of responses to six survey questions that asked students to report how often they talked with their mother or father about topics such as "how things are going with your school work or grades" and "romantic relationships and dating." Questions were adapted from Smith et al. (2012); values on the scale range from 1 to 4, with higher values indicating greater communication with parents.
Perceived conflict management ability	Multiple-item scale variable: average of responses to five survey questions on which students rated their ability to manage conflict by doing things such as "admit that you might be wrong during a disagreement," "avoid saying things that could turn a disagreement into a big fight," and "accept another person's point of view even if you don't agree with it." Questions were adapted from Buhrmester et al. (1998); values on the scale range from 1 to 4, with higher values indicating greater perceived communication skills when involved in a disagreement with another person.

Program implementation and costs

A single team of two Bethany staff members—an African American male and a white female—co-facilitated the *Wise Guys* sessions in all seven study schools. Both facilitators had at least a bachelor's degree in a relevant field and prior experience working together to deliver programming related to preventing teen pregnancy. The facilitators attended a two-day training on *Wise Guys* sponsored by the Iowa Department of Public Health that was led by the curriculum distributor. In addition, the PREP program coordinator from the Iowa Department of Public Health provided ongoing technical assistance to the Bethany facilitators through monthly telephone calls and biannual site visits. Having the same pair of staff members co-facilitate the *Wise Guys* sessions in all schools helped simplify the initial training and ongoing technical assistance, and promoted consistency in program implementation across schools and throughout the evaluation period. The study findings pertain specifically to this pair of facilitators and do not necessarily reflect the experience of implementing *Wise Guys* with a larger number of facilitators.

The process study concluded that the two facilitators generally implemented the curriculum as intended (Kisker and Murphy 2016). According to classroom logs completed by the two Bethany facilitators, the facilitators offered 95 percent of planned sessions during the three years of implementing the program. The program sessions were generally well attended. Of students assigned to the treatment group, nearly all (97 percent) attended at least one *Wise Guys* session. On average, the boys attended 77 percent of the sessions offered. In focus groups, boys cited practical issues such as scheduling conflicts or illness as the most common reasons for missing a session, rather than lack of interest.

As expected for a program offered during the school day, limited class time and scheduling conflicts presented implementation challenges. Across the seven study schools, class periods ranged in length from about 40 to 60 minutes (Kisker and Murphy 2016). In schools with shorter class periods, the facilitators reported they did not have enough time to answer questions or had to rush through some activities. In addition, school weather closures, holidays, student testing, and school assemblies forced Bethany to cancel some *Wise Guys* sessions. When this happened, the facilitators either omitted a session from the program or combined multiple sessions into one class period. The facilitators most often chose to drop the *Dating Violence* session because the material was similar to that in the supplemental healthy relationships adult preparation session called *In Their Shoes*. Both sessions covered elements of healthy relationships and dating violence.

To address the challenge of scheduling conflicts identified in the first year of implementation, Bethany received approval from the Iowa Department of Public Health to reduce the number of planned sessions from 14 to 13, by combining the sessions on goal setting and decision making (Kisker and Murphy 2016). This change, which followed guidance provided by the *Wise Guys* developer, made it easier for Bethany to adjust the program schedule if needed and complete the program within a single semester as intended. Shortening the curriculum in this way appeared to reduce the need to drop sessions. In the first year, Bethany dropped a session from 60 percent of the Wise Guys cohorts because of scheduling conflicts. Once the curriculum was shortened, Bethany dropped a session from only about one-third of the cohorts (Kisker and Murphy 2016).

Boys perceived the program as a meaningful supplement to the sex education typically offered in their schools (Kisker and Murphy 2016). In focus groups, boys expressed that the content of the *Wise Guys* sessions went beyond the information they received in their regular science or health classes. For example, as one focus group participant explained, "Some of the topics we talk about are the same, but we learn more in *Wise Guys*; they go deeper into it" (Kisker and Murphy 2016). Some boys also expressed more comfort discussing potentially sensitive and personal topics in the *Wise Guys* groups than in their regular classes. They appreciated the environment of smaller boys-only groups and having the groups led by adults other than their regular school teachers. Most boys said they enjoyed the program and wished it had more sessions (Kisker and Murphy 2016).

On the basis of cost information collected from Bethany, the study team estimated the per-participant cost was $488 per student served. Labor expenses associated with the two facilitators and other program staff represented almost 80 percent of these costs. Other costs included program supplies, office equipment, travel costs, and shared administrative and indirect resources required to operate and implement the program. These per-participant costs are substantially higher than the cost for another in-school program examined as part of the national PREP evaluation—*Reducing the Risk* implemented in rural Kentucky—which had a per-participant cost of only $113 (Goesling et al. 2018). The fact that *Wise Guys* as implemented by Bethany used two facilitators for each session—instead of one facilitator as in the *Reducing the Risk* study—increased program costs. In addition, unlike *Reducing the Risk*, which was implemented in mandatory health classes, *Wise Guys* was implemented as a voluntary program with each group serving a relatively small number of boys. These small groups increased per-student costs. Even so, available evidence suggests that the cost of this implementation of *Wise Guys* was still relatively low compared to the broad range of pregnancy prevention programs offered to teens. Among the 28 programs included in a recent cost study of evidence-based teen pregnancy prevention programs for the Office of Adolescent Health, the average annual per-participant cost ranged from $68 to $11,000, with a median program cost of $927 per youth (Zaveri et al. 2017). The appendix to this report contains additional detail on the study's cost estimates and how it was conducted.

Program impacts after two years

Wise Guys aims to promote male responsibility and discourage early entry into fatherhood. The impact findings presented below test whether the program reduced the likelihood of sexual initiation during the two years after program entry, when sample members were just entering high school. They also examine impacts on knowledge, attitudes, and communication skills. The technical appendix includes additional impact estimates for secondary outcomes.

Offering *Wise Guys* as a supplement to the regular sex education curriculum in the study schools did not reduce rates of sexual initiation during the two-year follow-up period; at the end of follow-up, these rates were low for both research groups

Boys in both the *Wise Guys* group and the control group had a similar likelihood of having ever had sexual intercourse (Table 4.) At the two-year follow-up, 11 percent of boys in the *Wise Guys* group and 9 percent of boys in the control group reported having ever had sexual intercourse. The two percentage point difference between groups was not statistically significant.

Table 4. Impacts of *Wise Guys* on delayed sexual initiation

Measure	*Wise Guys* group	Control group	Impact	Effect size
Ever had sexual intercourse (%)	11	9	2	0.09
Sample size	372	291		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Wise Guys* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Wise Guys increased boys' knowledge of contraception and STIs and their support for condom use

At the two-year follow-up, boys in the *Wise Guys* group knew more about contraception and STIs than control group boys did (Table 5). Boys in the *Wise Guys* group answered an average of 6.5 of 10 knowledge questions correctly, compared with an average of 6.1 correct responses for boys in the control group. Looking at the 10 knowledge questions separately, boys in the *Wise Guys* group were statistically significantly more likely to answer 4 of the 10 questions correctly (shown in the appendix). For these four questions, the impact on the proportion of correct responses ranged from 5 to 10 percentage points.

Table 5. Impacts of *Wise Guys* on knowledge and attitudes

Measure	*Wise Guys* group	Control group	Impact	Effect size
Knowledge of contraception and sexually transmitted infections (STIs) index (range: 0 to 10)	6.5	6.1	0.4*	0.17
Support for abstinence scale (range: 1 to 4)	3.0	3.0	0.0	0.01
Support for condom use scale (range: 1 to 5)	4.6	4.5	0.1**	0.20
Sample size	372	291		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Wise Guys* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Boys in the *Wise Guys* group were also more likely than those in the control group to agree with statements indicating that sexually active youth should use condoms (Table 5). On a scale ranging from 1 to 5, with higher values indicating more agreement, boys in the *Wise Guys* group had an average scale score of 4.6, compared with an average score of 4.5 for boys in the control group. The difference in average scores is statistically significant and corresponds to an effect size of 0.20. This impact is similar in size to the impact on this outcome at the one-year follow-up (Goesling et al. 2018). Boys in both research groups were equally likely to agree with statements indicating that people their age should not have sex, also similar to the one year results. On a scale ranging from 1 to 4, with higher values indicating more agreement, boys in the *Wise Guys* group had an average score of 3.03 and boys in the control group had an average score of 3.02.

Wise Guys strengthened boys' motivation to avoid getting someone pregnant

At the two-year follow-up, boys in the *Wise Guys* group expressed a higher level of motivation to avoid getting someone pregnant than boys in the control group (Table 6). On a five-point scale, the average score was 4.0 for boys in the *Wise Guys* group and 3.8 for boys in the control group. This difference was statistically significant at the 10 percent level. An average score of 4.0 on the scale corresponds with a boy saying he would feel upset if he got someone pregnant now. This impact after two years was larger than the impact found at the one-year follow-up, which was not statistically significant (Goesling et al. 2018).

Wise Guys did not change boys' intentions to have sex, relationship attitudes, goal-setting ability, or communication skills

Similar to the one-year results, *Wise Guys* did not affect boys' intentions to have sex. When asked if they intended to have sexual intercourse in the next year if they had the chance, about 1 in 3 boys in both research groups said they definitely or probably would have sex (Table 6). Similarly, boys in both research groups recognized the signs of healthy romantic relationships and expressed a high level of confidence in their ability to plan for and achieve their goals. On a four-point scale measuring support for respect in romantic relationships, boys in both research groups had an average score of 3.5. When asked if hitting or pushing between people who are dating is acceptable, boys in both research groups were equally likely to disapprove. On a four-point scale measuring future career goals and plans, boys in both research groups had an average score of 3.3.

Table 6. Impacts of *Wise Guys* on motivation and intentions, relationship attitudes, goal setting, and communication skills

Measure	*Wise Guys* group	Control group	Impact	Effect size
Motivation to avoid teen pregnancy scale (range: 1 to 5)	4.0	3.8	0.2+	0.15
Intends to have sexual intercourse in the next year (%)	29	31	-2	-0.05
Support for respect in romantic relationships scale (range: 1 to 4)	3.5	3.5	0.0	0.05
Disapproval of dating violence scale (range: 1 to 4)	3.5	3.5	0.1	0.09
Goals and plans for future career scale (range: 1 to 4)	3.3	3.3	0.0	-0.03
Communication with parents scale (range: 1 to 4)	2.0	2.0	0.0	0.00
Perceived conflict management ability scale (range: 1 to 4)	2.5	2.5	0.1	0.08
Sample size	372	291		

Sources: Baseline and one-year follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Wise Guys* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

At the two-year follow-up, boys in both research groups reported similar levels of communication with their parents and similar perceptions of their conflict management skills. On a four-point scale measuring frequency of communication with parents, the average score was 1.9 for boys in both research groups. An average score of 2.0 on the scale corresponds with a boy saying he talked with his parents about topics such as personal problems or how things are going

in school about once or twice a week. On a four-point scale measuring perceived conflict management skills, the average score was 2.5 for boys in both research groups. For both outcomes, the small difference between groups was not statistically significant. The findings for these outcomes are consistent with those found at the one-year follow-up (Goesling et al. 2018).

Discussion

This study assessed the effects of the *Wise Guys* curriculum as implemented in a set of Davenport-area middle schools. The program was administered by Bethany for Children and Families using funds from the state's federal PREP grant. *Wise Guys* is one of a few teen pregnancy prevention curricula designed specifically for adolescent males. Although the curriculum was first developed nearly 30 years ago and remains widely implemented, there is little rigorous evidence on its impacts. More broadly, relatively little rigorous research has been conducted to date on any teen pregnancy prevention program that specifically targets boys. For the impact study, Bethany recruited a large sample of more than 700 boys for the study. The process study of *Wise Guys* in Iowa found that Bethany staff generally implemented the program as planned in the seven study schools (Kisker and Murphy 2016). The combination of a large sample size and strong program implementation give this study a sound basis for drawing conclusions about the impacts of the program over the study's two-year follow-up period. Conversely, the fact that it was implemented in a single county and delivered by the same pair of facilitators across all study schools limits the generalizability of the results somewhat.

On the one-year follow-up survey, boys in the *Wise Guys* group reported that they had received more instruction on abstinence, contraception, STIs, and relationships in the year after they entered the study than boys in the control group did (Goesling et al. 2018). This additional instruction translated into greater knowledge of contraception and STIs among *Wise Guys* boys relative to the control group a year after they entered the study, as well as more positive attitudes toward condom use at the one-year point.

Wise Guy's ultimate aim is to reduce risky sexual behavior. This analysis, based on a two-year follow-up, provided an opportunity to examine the program's impact in this key area. The study found that, as a supplement to the regular school curriculum, *Wise Guys* did not reduce the likelihood of sexual initiation during the study's two-year follow-up period. A common challenge for assessing the effects of teen pregnancy prevention programs on sexual behaviors—particularly programs serving a young population—is that rates of sexual activity remain low in the initial period after the intervention, making it difficult to observe program effects on these outcomes. At the end of the two-year follow-up, when boys in the study sample were enrolled in 9th grade, only 1 in 10 reported ever having had sexual intercourse. This low overall rate of sexual activity limited the effect the program could have during the study period. This low rate likely reflects, at least in part, a broad national trend in recent years toward lower rates of sexual activity among high school students, particularly 9th graders (Kann et al. 2018). For example, the percentage of 9th grade male students that reported ever having had sex decreased from 38 percent to 23 percent from 2007 to 2017 (Centers for Disease Control and Prevention 2018).

The program did have impacts on other outcomes at the two-year point. In particular, *Wise Guys* had positive effects at the two-year follow-up on knowledge of contraception and STIs, attitudes toward condom use, and motivation to avoid getting someone pregnant. The persistence of the positive impact on attitudes toward condom use, as well as the emergence at the two-year follow-up of an impact on motivation to avoid getting someone pregnant, are particularly

noteworthy. These impacts suggest that the program's messages concerning male responsibility regarding teen pregnancy had some of the desired effects, and effects that persisted two years after the boys entered the program. In addition, having more positive attitudes toward condom use is associated with a higher likelihood of using condoms (Manlove et al. 2008). Therefore, these effects suggest that an impact on risky sexual behavior could emerge for these boys later in high school, as their rates of sexual activity increase.

This study adds to the knowledge base on how to address the specific needs of boys when providing teen pregnancy prevention services. *Wise Guys* as implemented in Iowa had some successes, with positive impacts two years after program entry on knowledge and attitudes, as well as motivation to avoid pregnancy. However, the study did not find evidence of delayed sexual initiation during the study's two-year follow-up period. Given the low rates of sexual activity among sample members at the end of the study's follow-up, additional research may be needed to have a more definitive assessment of *Wise Guys'* success in reducing sexual risk behaviors among adolescent males.

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Technical appendix

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This technical appendix supplements the two-year impact report of *Wise Guys* in Davenport, Iowa, conducted as part of the Personal Responsibility Education Program (PREP) Multi-Component Evaluation. The appendix provides additional details on the impact study design, methods, and findings. The first section of the appendix describes the methods used to recruit boys for the study and randomly assign them to the treatment and control groups. The second section describes the methods used to estimate the operational costs of the program. The third section describes the survey administration procedures and response rates. The fourth and fifth sections describe the outcome measures and analytic methods, respectively. The sixth section presents impact findings for key subgroups, and the last section presents impact findings for secondary outcomes not included in the main body of the report.

Recruitment and random assignment

Recruitment for the study occurred over three consecutive school years from 2013–2014 to 2015–2016. At the start of each semester, the study team from Mathematica Policy Research worked with staff from Bethany and the participating schools to distribute study-permission forms to the parents or guardians of 7th-grade boys in seven Davenport-area middle schools. In addition to helping distribute the permission forms, Bethany staff made themselves available to school staff and parents to answer questions about the study and program. Bethany also encouraged participation by hosting assemblies in which former participants talked about their experiences in *Wise Guys*. Only boys who received written permission from a parent or guardian were eligible to participate in the study. The New England Institutional Review Board approved the study's procedures and permission form.

For each of the seven participating schools, the study team conducted random assignment either once or twice per academic year, depending on the school's enrollment and the number of boys who received written permission from a parent or guardian. The team conducted a first round of random assignment in September of each academic year to select the boys offered *Wise Guys* in the fall semester. For schools with a sufficient number of students, the team conducted a second round of random assignment in January of each year to select a different group of boys offered *Wise Guys* in the spring semester. The team repeated this process for each school over the three consecutive academic years of the study.

This approach to random assignment resulted in a blocked evaluation design (Schochet 2016). The study team defined each combination of school, semester (fall or spring), and academic year as a block. Within each block, the study team randomly assigned boys to either a treatment group that could participate in the *Wise Guys* sessions or a control group that could not. By the end of the third academic year, the study team had conducted random assignment for 31 separate blocks, each ranging in size from 11 to 50 boys. The study team followed a standard approach to give Bethany a sufficient number of boys to start a new *Wise Guys* group. In the smallest blocks, the study team randomly assigned a relatively larger proportion of boys to the treatment group than the control group. Although a larger proportion of boys were assigned to the treatment group, the approach did not introduce bias because Bethany or school staff could not predict boys' assigned study group. Per the group sizes recommended by the *Wise Guys* curriculum distributor, the team assigned no more than 25 boys to any one *Wise Guys* group. In total, across the 31 blocks, the study team randomly assigned 417 boys to the treatment group

and 319 boys to the control group. As discussed later in this appendix, the study team accounted for the blocked design in the regression models used to estimate the impacts of the program.

Bethany had a goal of including students at different risk levels in each *Wise Guys* group. To achieve this goal, the study team asked Bethany program staff to work with the student counselors in each school to group boys into high-, medium-, and low-risk categories before each round of random assignment. The counselors made these assessments on a subjective basis, without following a formal protocol or assessment tool. In conducting the analyses presented in this report, the study team found a strong correlation between the risk levels assigned by the school counselors and boys' self-reported risk behaviors on the study surveys. Whenever possible, the study team accounted for the boys' risk levels when conducting random assignment by selecting boys for the treatment group from each of the three categories. During the three years of sample enrollment, schools did not always recruit enough boys in a given semester to allow for an intentional mix of students across risk categories. In these cases, the study team conducted random assignment by combining multiple risk categories into larger groups.

Data from the baseline survey show that the random assignment process yielded groups of boys who were similar at baseline (Table A.1). The groups were similar on the demographic characteristics of age, race and ethnicity, and residence with both biological parents. The groups also had similar baseline values on all of the outcome measures examined in this report.

Students in both research groups continued to receive the sex education provided as part of the regular school curriculum, which varied from school to school (Table A.2). For example, one school offered one week of sexuality education to 7th graders as part of a required nine-week health class. Another school provided two or three class periods on pregnancy and sexually transmitted infections (STIs) as part of a broader unit on human growth and development. The schools had no standardized or mandated district-wide health curriculum. Because Bethany offered the *Wise Guys* sessions as part of a voluntary elective class, there was relatively little risk of control group boys mistakenly attending the *Wise Guys* sessions. After each round of random assignment, the study team provided Bethany with a roster of boys selected for *Wise Guys*, which Bethany used to track attendance at the *Wise Guys* sessions. It is possible that control group boys received secondhand information about the *Wise Guys* sessions from friends or classmates who were selected for the program. However, without direct exposure to the *Wise Guys* sessions or Bethany facilitators, it is unlikely that this secondhand information would have changed boys' attitudes or behaviors (Keogh-Brown et al. 2007).

Table A.1. Baseline characteristics for the full sample

Measure	*Wise Guys* group	Control group	Difference
Demographics			
Age (%)			
12 or younger	81	81	0
13 or older	19	19	0
Race and ethnicity (%)			
White, non-Hispanic	49	54	-5
African American, non-Hispanic	14	13	1
Hispanic	22	21	1
Other	15	12	3
Lives with both biological parents most or all of the time (%)	46	51	-5
Identified as high risk by school counselors (%)	30	29	1
Knowledge and attitudes			
Knowledge of contraception and STIs index (range: 0 to 4)	1.01	1.04	-0.03
Support for abstinence scale (range: 1 to 4)	3.38	3.35	0.03
Support for condom use scale (range: 1 to 5)	4.39	4.32	0.07
Motivation and intentions			
Motivation to avoid a teen pregnancy scale (range: 1 to 5)	3.91	3.95	-0.03
Intends to have sexual intercourse in the next year (%)	13	12	0.00
Relationship attitudes			
Support for respect in romantic relationships scale (range: 1 to 4)	3.52	3.43	0.09
Disapproval of dating violence scale (range: 1 to 4)	3.49	3.46	0.03
Goal setting and communication skills			
Goals and plans for future career scale (range: 1 to 4)	3.37	3.37	0.00
Communication with parents scale (range: 1 to 4)	1.89	1.90	-0.01
Perceived conflict management ability scale (range: 1 to 4)	2.48	2.46	0.03
Sexual risk behavior			
Ever had sexual intercourse (%)	4	5	-2
Sample size	**417**	**319**	

Sources: Baseline survey conducted by Mathematica Policy Research.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

STI = sexually transmitted infection.

Program cost estimates

To provide additional context on the implementation of *Wise Guys* in Iowa, the study team estimated costs using the "ingredients" or resources cost method (Levin and McEwan 2001), a common standard in the field. The first step of this method involves identifying all of the resources required to deliver the program. In Iowa, resources included facilitators who delivered the program, secretarial staff who provided support, program and office supplies, travel costs,

and other administrative and indirect resources. The study team collected the relevant cost information from Bethany's staff. The second step involves assigning a dollar value to each resource identified, either directly from accounting records or by estimating the value using market prices or "shadow" prices (for resources for which there is no available market price). For this step, the study team relied primarily on Bethany's accounting records, with a few exceptions noted later in this section of the report.

The study team estimated both (1) total annual program cost for the 2014–2015 academic year and (2) the average cost to serve one participant (also known as the per-participant cost). The team calculated the per-participant cost by dividing total annual program cost by the total number of students who attended at least one program session during the 2014–2015 academic year. This was done using a three-step process. First, the study team obtained from Bethany an estimate of the total number of students who attended at least one *Wise Guys* session during the 2014–2015 school year (n = 163 students). Most of these students were enrolled in our impact evaluation of *Wise Guys*. However, we also counted students in two *Wise Guys* groups that were not part of the impact evaluation, because some of Bethany's reported costs for the 2014–2015 school year related to serving them. Second, we adjusted the estimated number of participants to account for under-enrollment that resulted from the need to form a control group for the evaluation (McConnell and Glazerman 2001). The study team estimated that Bethany had the staffing capacity and classroom space to serve as many as 20 students in each *Wise Guys* group. Because of the evaluation, however, Bethany had to serve smaller group sizes than might have been possible in absence of the evaluation. To adjust for this source of under-enrollment, for each *Wise Guys* group, we created an adjusted count by adding to our enrollment counts the number of students assigned to the control group. We capped these adjusted counts at no more than 20 students per group, which was our estimate of the maximum number of students Bethany would have served in absence of the evaluation. With this adjustment, our estimate of the total number of students that could be potentially served during the 2014–2015 school year increased from 163 to 209 students. Finally, as a third step in the process, we divided the total annual program cost for the 2014–2015 school year by our adjusted enrollment count (n = 209) to yield the estimated per-participant cost.

Table A.2. Timing and dosage of sex education provided in study schools (regular school curriculum, excluding *Wise Guys*)

School	Grade level	Number of sessions
School A	7th	5
School B	8th	9
School C	7th	NA
School D	8th	10
School E	7th	2 or 3
School F	7th	20
School G	6th–8th	NA

Source: Kisker and Murphy (2016).

NA = Not available; schools were unable to provide information on the number of sessions offered.

A cost analysis can describe program costs from different perspectives (Levin and McEwan 2001). From the perspective of Bethany, the agency responsible for implementing the program, resources like the physical classroom space were not considered costs to their agencies, because the schools provided these resources free of charge. However, when considering program costs from a broader societal perspective, classroom space is included in program cost, because these spaces reflect public resources that could instead be used for other purposes. In this way, the choice of perspective in a cost analysis can influence both the list of resources included in the analysis and interpretation of the resulting estimates.

As presented in the main body of this report, the study team estimated the per-participant cost to Bethany at $488 per student (Table A.3). For comparison purposes, the study team also estimated costs from the societal perspective (Table A.3). These estimates start with the costs to Bethany and then add the value of the physical classroom space used for delivering the *Wise Guys* sessions. The societal perspective increases the estimated per-participant cost by 4 percent, from $488 to $508 per student.

For all of these cost estimates, the study team relied primarily on Bethany's accounting records to value the resources, with two exceptions. First, to account for local prices or cost of living in Iowa, the study team used a wage index to adjust the reported value of personnel resources (staff salaries, payroll taxes, and benefits) as reported by Bethany. The team created the index using state-level and national wages for community and social service occupations as reported for May 2014 by the Bureau of Labor Statistics. The index was created by dividing the wages for community and social service occupations nationwide by the same wages in Iowa. This adjustment makes it easier to compare the cost estimates to those of programs implemented in places with a different cost of living. Second, to value physical classroom space, the study team identified market rates to rent comparable spaces, such as meeting rooms in community centers. The team used a resulting market estimate of $42 per hour per classroom.

Table A.3. Program cost estimates

	Total annual cost	Number of students served (adjusted)	Cost per student
Cost to Bethany			
Total	$102,022	209	$488
Costs to society			
Total	$106,138	209	$508

Source: Cost data collected by Mathematica Policy Research from Bethany for Children and Families.

Survey administration

For all boys who received permission from a parent or guardian to participate in the study, trained members of the study team administered surveys at three time points: (1) baseline, before random assignment and the start of the program; (2) about one year after the start of the program; and (3) about two years after the start of the program. The study team designed the surveys as paper-and-pencil questionnaires that boys could complete individually during the regular school day. For the two-year follow-up survey on which this report is based, the study team administered about 3 percent of the surveys by telephone for students who had moved from the

area or were otherwise unavailable to complete the survey in school. The study team also requested assent from the boys themselves before each round of surveys. Using these methods, the study team achieved response rates for the two-year follow-up survey of 89 percent for the treatment group and 91 percent for the control group.

The study team designed the surveys to capture a broad range of demographic and personal characteristics, including boys' exposure to information on reproductive health topics, knowledge of contraception and STIs, views and attitudes toward sexual activity, and involvement in sexual activity and other risk behaviors. The survey questions were drawn or adapted from existing studies that are listed with the outcome definitions below.

To avoid asking boys who were not yet sexually active about potentially sensitive questions about contraceptive use and other sexual risk behaviors, the study team designed the survey to have three separate parts. All boys completed Part A of the survey, which asked general questions about demographics, family background, views, attitudes, and knowledge. At the end of Part A, the survey asked boys a single yes or no screening question about whether they had ever had sexual intercourse or oral sex. If boys answered yes to the screening question, the survey directed them to complete Part B1 of the survey, which contained more detailed questions about sexual activity, contraceptive use, and other risk behaviors. If boys answered no to the screening question, the survey directed them to instead complete Part B2 of the survey, which included an alternative set of questions. The study team formatted Parts B1 and B2 of the survey to look indistinguishable, so that when boys were completing the survey in a group setting, they could not tell which part of the survey other boys were answering. Parts B1 and B2 repeated the screening question from the end of Part A, to confirm boys were responding to the correct section of the questionnaire.

Nonresponse to the two-year follow-up survey had little effect on the similarity of boys in the treatment and control groups (Table A.4). When examining baseline demographic and personal characteristics for only boys who completed a two-year follow-up survey, the study team found one significant difference on race at the 5 percent level and one significant difference on a measure of support for respect in romantic relationships at the 10 percent level. First, boys in the *Wise Guys* group were less likely to be white than boys in the control group (49 versus 56 percent). Second, boys in the *Wise Guys* group were more likely than control group boys to agree with statements about the importance of respect in romantic relationships. On a four-point scale, the average score was 3.53 for boys in the *Wise Guys* group and 3.42 for boys in the control group. To adjust for these differences, the study team included race and ethnicity as a control variable in the regression models used to estimate program impacts, as described later in this appendix. In addition, the study team controlled for the baseline difference in attitudes toward romantic relationships in the regression models used to estimate program impacts.

Table A.4. Baseline characteristics for the analytic sample

Measure	*Wise Guys* group	Control group	Difference
Demographics			
Age (%)			
12 or younger	80	81	-1
13 or older	20	19	1
Race and ethnicity (%)			
White, non-Hispanic	49	56	-8*
African American, non-Hispanic	12	12	0.00
Hispanic	24	19	4
Other	16	13	3
Lives with both biological parents most or all of the time (%)	50	53	-4
Identified as high risk by school counselors	28	28	0.00
Knowledge and attitudes			
Knowledge of contraception and STIs index (range: 0 to 4)	1.03	1.08	-0.05
Support for abstinence scale (range: 1 to 4)	3.39	3.38	0.01
Support for condom use scale (range: 1 to 5)	4.40	4.33	0.07
Motivation and intentions			
Motivation to avoid a teen pregnancy scale (range: 1 to 5)	3.92	4.01	-0.09
Intends to have sexual intercourse in the next year (%)	11	11	0.00
Relationship attitudes			
Support for respect in romantic relationships scale (range: 1 to 4)	3.53	3.42	0.11+
Disapproval of dating violence scale (range: 1 to 4)	3.47	3.44	0.03
Goal setting and communication skills			
Goals and plans for future career scale (range: 1 to 4)	3.38	3.36	0.02
Communication with parents scale (range: 1 to 4)	1.88	1.89	-0.01
Perceived conflict management ability scale (range: 1 to 4)	2.49	2.46	0.03
Sexual risk behavior			
Ever had sexual intercourse (%)	3	5	-1
Sample size	372	291	

Source: Baseline survey conducted by Mathematica Policy Research.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

STI = sexually transmitted infection.

Outcome measures

In selecting outcome measures for the impact analysis, the study team sought to balance two competing demands: (1) the need to examine the full range of outcomes addressed by the curriculum and (2) the need to minimize multiple comparison concerns. As described earlier in the report, the *Wise Guys* sessions cover a broad range of topics. Some sessions provide factual information on human sexuality, pregnancy, and STI transmission, whereas other sessions address broader adolescent topics, such as goal setting and communication skills. The study team sought to include outcomes reflecting both types of sessions. However, focusing on a broad range of outcomes can increase the chances of identifying a spurious statistically significant impact (Schochet 2009). As discussed later in this appendix, the study team deemed program impacts statistically significant if the associated *p*-value of the estimate fell below 5 percent, a common standard. A 5 percent chance of incorrectly identifying an estimated effect as a true impact is a relatively modest risk for a single test. However, the more outcomes examined, the more likely that at least one of the tests will estimate a spuriously statistically significant impact.

To balance these demands, the study selected outcomes covering a broad range of topics but limited the number of outcomes selected for any one domain. The study team selected outcomes covering seven domains: (1) knowledge, (2) attitudes, (3) motivations and intentions, (4) attitudes toward relationships, (5) goal setting, (6) communication skills, and (7) delayed sexual initiation. As discussed in the interim report, the study team designated the measure of sexual initiation to serve as the confirmatory outcome—meaning that whether the program has an impact on this outcome represents the study's central test of overall effectiveness. The other domains align with those included in the interim impact report (Goesling et al. 2017). This section of the appendix outlines the construction of specific outcome measures within each domain.

1. Knowledge

The study team created a summary measure of boys' knowledge of contraception and STIs from the following questions included on the survey:

- If condoms are used correctly and consistently, how much can they decrease the risk of pregnancy? Not at all, a little, a lot, completely, or don't know.
- If condoms are used correctly and consistently, how much can they decrease the risk of getting HIV, the virus that causes AIDS? Not at all, a little, a lot, completely, or don't know.
- If birth control pills are used correctly and consistently, how much can they decrease the risk of pregnancy? Not at all, a little, a lot, completely, or don't know.
- If birth control pills are used correctly and consistently, how much can they decrease the risk of getting HIV, the virus that causes AIDS? Not at all, a little, a lot, completely, or don't know.
- Can you get a sexually transmitted disease, also known as an STD or STI, from having oral sex? Yes, no, or don't know.
- Can you tell if people have HIV, the virus that causes AIDS, by looking at them? Yes, no, or don't know.

- Can a woman give HIV to a man if they are having sexual intercourse without a condom? Yes, no, or don't know.
- Can a person who has sexual intercourse only with people he or she knows well ever get HIV? Yes, no, or don't know.
- Can a pregnant woman who has HIV pass it on to her newborn baby? Yes, no, or don't know.
- Which of the following methods offers the most protection against HIV, the virus that causes AIDS, and other sexually transmitted diseases, also known as STDs or STIs? Birth control pills, the shot (Depo-Provera), condoms, the patch, or don't know.

The study team adapted these questions from prior studies of adolescents (Goldstein et al. 2010; Trenholm et al. 2007). For each question, the study team coded each boy as having provided either a correct or an incorrect response. The study team considered skipped questions as incorrect responses. The team then totaled the number of correct responses across the 10 questions to create a 10-item knowledge test of contraception and STIs. Possible scores on the measure ranged from 0 to 10, with higher values indicating more correct responses.

2. Attitudes

The study team constructed two summary measures of boys' attitudes: one measuring support for abstinence and the other measuring support for condom use among sexually active youth. For the measure of support for abstinence, the survey asked boys to report their level of agreement with each of the following statements:

- Having sex is a good thing for you to do at your age.
- At your age right now, having sex would create problems.
- At your age right now, not having sex is important for you to be safe and healthy.
- At your age right now, it is okay for you to have sex if you use birth control, such as a condom, the pill, and so on.

For each statement, the survey asked boys to respond on a four-point scale ranging from strongly disagree to strongly agree. The study team drew the questions from a similar survey administered as part of the Evaluation of Adolescent Pregnancy Prevention Approaches (Smith et al. 2012). To construct a scale from boys' responses to these statements, the study team first assigned each response category a number ranging from 1 to 4. They organized the response categories for each statement so that higher values indicated greater support for abstinence. For boys who responded to at least three of the four statements, the study team calculated a scale score by taking the average value of the boy's responses across the different statements. The team did not calculate scores for boys who responded to only one or two statements. The resulting scale ranged from 1 to 4, with higher values indicating greater support for abstinence. The scale had sufficient internal reliability at baseline (alpha coefficient = 0.70) and the two-year follow-up (alpha coefficient = 0.79).

For the measure of support for condom use among sexually active youth, the survey asked boys to report their level of agreement with the following statements:

- Condoms should always be used if a person your age has sex.
- Condoms are important to make sex safer.

For each statement, the survey asked boys to respond on a five-point scale ranging from strongly disagree to strongly agree. The study team drew the questions from a similar survey administered as part of the Evaluation of Adolescent Pregnancy Prevention Approaches (Smith et al. 2012). To construct a scale from boys' responses to these statements, the study team first assigned each response category a number from 1 to 5. For boys who responded to both statements, the team calculated a scale score by taking the average value of their responses across the two statements. The team did not calculate scale scores for boys who responded to only one statement. The resulting scale ranged from 1 to 5, with higher values indicating greater support for condom use if one is sexually active. The scale had sufficient internal reliability at baseline (alpha coefficient = 0.78) and the two-year follow-up (alpha coefficient = 0.76).

3. Motivation and intentions

To measure boys' motivation to avoid teen pregnancy, the survey asked how they would feel if they got someone pregnant at their age. The question had five response categories ranging from very happy to very upset. To construct a scale from boys' responses to this statement, the study team assigned each response category a number from 1 to 5. Higher values indicated greater motivation to avoid getting someone pregnant.

To measure boys' intentions to have sexual intercourse, the survey asked the following question: "Do you intend to have sexual intercourse in the next year, if you have the chance?" Response categories were yes, definitely; yes, probably; no, probably not; and no, definitely not. The study team used responses to this question to construct a binary measure coded 1 for boys who said they definitely or probably intended to have sex and coded 0 for boys who said they definitely or probably would not have sex.

4. Attitudes toward relationships

To measure boys' attitudes about romantic relationships, the study team constructed two measures that assessed: (1) boys' support for respect in romantic relationships, and (2) boys' disapproval of dating violence. For the first measure, the study team used boys' responses to the following statement: "A good dating relationship is based on mutual respect, not just sex." For the second measure, the study team used boys' responses to the following statement: "There are times when hitting or pushing between people who are dating is okay." For both statements, the survey asked boys to respond on a four-point scale ranging from strongly disagree to strongly agree. The study team calculated a score for each measure by assigning each response category a number from 1 to 4. Higher values indicated greater support for respect in romantic relationships and greater disapproval of dating violence.

5. Goal setting

The survey included two questions designed to measure goal setting, which asked boys whether they had (1) specific goals for their future career, and (2) a plan for achieving their future career goals. The study team adapted the questions from earlier studies by Carson and Bedeian (1994) and Diemer and Blustein (2007). For each statement, the survey asked boys to respond on a four-point scale ranging from strongly disagree to strongly agree. The study team assigned each response category a number from 1 to 4. Higher values indicated greater perceived confidence in established career goals and plans. For boys who responded to both statements, the study team calculated a scale score by taking the average value of the boy's responses to the two statements. The team did not calculate scale scores for boys who responded to only one statement. The scale had sufficient internal reliability at baseline (alpha coefficient = 0.77) and the two-year follow-up (alpha coefficient = 0.83).

6. Communication skills

The study team created two summary measures of boys' communication skills that assessed: (1) perceived conflict management ability and (2) frequency of communication with parents. For the measure of conflict management ability, the survey asked boys to report their perceived ability to do each of the following:

- Admit that you might be wrong during a disagreement.
- Avoid saying things that could turn a disagreement into a big fight.
- Accept another person's point of view even if you don't agree with it.
- Listen to another person's opinion during a disagreement.
- Work through problems without arguing.

For each statement, the survey asked boys to respond on a four-point scale ranging from bad to extremely good. The study team adapted the questions from an earlier study by Buhrmester et al. (1998). To construct a scale from boys' responses to these statements, the study team first assigned each response category a number from 1 to 4. Higher values indicated greater perceived skill. For boys who responded to at least four of the five statements, the study team calculated a scale score for each boy by taking the average value of the boy's responses across the different statements. The team did not calculate scores for boys who responded to three or fewer statements. The resulting scale ranged from 1 to 4, with higher values indicating greater perceived conflict management ability. The scale had sufficient internal reliability at baseline (alpha coefficient = 0.74) and the two-year follow-up (alpha coefficient = 0.77).

To measure boys' frequency of communication with their parents, the survey asked how many times they had discussed each of the following topics with their mother or father in the past three months:

- How things are going with your school work or grades.
- A personal problem you were having.
- Romantic relationships or dating.

- How to resist pressures to have sex.
- Avoiding drugs or alcohol.
- Whether you should be having sex at this time in your life.

For each topic, response categories ranged from never to 10 or more times. The study team adapted the questions from a similar survey administered as part of the Evaluation of Adolescent Pregnancy Prevention Approaches (Smith et al. 2012). To construct a scale from boys' responses to these questions, the study team first assigned each response category a number from 1 to 4. Higher values indicated more frequent communication. For boys who responded to at least five of the six questions, the study team calculated a scale score by taking the average value of the boy's responses across the different topics. The team did not calculate scores for boys who responded to four or fewer topics. The resulting scale ranged from 1 to 4, with higher values indicating more frequent communication with parents. The scale had sufficient internal reliability at baseline (alpha coefficient = 0.71) and the two-year follow-up (alpha coefficient = 0.80).

7. Delayed sexual initiation

Given the age of the boys enrolled in the study, the study team focused on delayed sexual initiation as the primary measure of sexual risk behavior. The survey asked boys if they had ever had sexual intercourse. The study team used responses to this question to construct a binary measure of delayed sexual initiation. This measure was limited to vaginal intercourse and did not include oral or anal intercourse.

In constructing this measure, the study team accounted for missing data (item nonresponse) and the potential for misreporting of sexual risk behavior by comparing boys' responses across multiple survey questions. For boys who completed Part B1 of the survey (described earlier), the team used their responses to a direct question asking if they had ever had vaginal intercourse. In some cases, boys did not respond to this direct question but responded to other survey questions about sexual activity, such as number of sexual partners or age at first sex. For some of these boys, the study team could logically infer their sexual initiation status from their responses to these other survey questions. Similarly, if a boy reported having had sex on the baseline survey but did not respond to the direct question on the follow-up survey, the study team logically inferred his sexual initiation status at follow-up using the baseline survey response. In other cases, boys provided contradictory information about their sexual initiation status across different survey questions. For these cases, the study team coded the boys' sexual initiation status as missing if the team could not clearly determine the status.

The study team conducted two sensitivity tests to determine if these coding decisions materially changed the study findings. They conducted the first test by changing the coding of the sexual initiation measure to account for inconsistencies in reported sexual activity across the surveys. For example, the study team coded sexual initiation to missing if boys reported having had sex at baseline and then reported not having had sex at the two-year follow-up. For the second test, the study team took the boys' responses to the relevant survey questions as given, without accounting for any missing data or inconsistencies across survey questions. The results of this sensitivity test (Table A.5) showed that the estimated rates of the sexual initiation and the

estimated impacts of *Wise Guys* on this outcome were the same regardless of the coding decisions used.

Analytic methods

The study team estimated the impacts of *Wise Guys* on boys' outcomes using *RCT-YES*, a publicly available statistical software tool (https://www.rct-yes.com/). *RCT-YES* uses estimation methods designed specifically for estimating treatment effects with data from randomized controlled trials. For the evaluation of *Wise Guys* in Iowa, the study team used the estimation methods for what *RCT-YES* describes as Design 2: the nonclustered, blocked design (Schochet 2016). These methods account for the fact that the study team randomly assigned boys to the treatment and control groups within separate blocks defined by the combination of school, semester (fall or spring), and academic year. Impact estimates are calculated as a regression-based weighted average across blocks of the difference in outcomes for boys in the treatment and control groups.

Table A.5. Sensitivity of impacts to coding of sexual risk behavior outcomes

Measure	*Wise Guys* group	Control group	Impact	Effect size
Ever had sexual intercourse (%)				
Primary coding[a]	11	9	2	0.09
Alternative coding[b]	11	9	2	0.07
Alternative coding[c]	11	9	2	0.08
Sample size				
Primary coding[a]	364	289		
Alternative coding[b]	358	282		
Alternative coding[c]	366	290		

Sources: Baseline and two-year follow-up surveys conducted by Mathematica Policy Research.

Notes: The numbers in the columns labeled *Wise Guys* group and Control group are regression-adjusted predicted values.

[a] Refers to the coding used to produce the findings reported in the main text of this report.

[b] Refers to a coding that accounts for inconsistent responses across the surveys.

[c] Refers to a coding that took students' responses to the relevant survey questions.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

RCT-YES requires users to input certain technical specifications of the model, such as the approach for covariate adjustment and handling of missing data. The study team used data from the baseline survey to include covariates for boys' age, race and ethnicity, risk level as identified by the school counselors, and the baseline value of the outcome measure (when available). To the extent that these covariates are correlated with boys' outcomes, they can improve the precision of the impact estimates by reducing the residual variation in the outcome measures (Orr 1999). For missing data, the study team used the default *RCT-YES* options of mean imputation for missing baseline covariates and case deletion for missing outcome data—meaning that the impact estimate for a particular outcome excludes boys with missing data for that outcome. The study team also used the *RCT-YES* default assumptions to calculate impacts assuming a finite-

population model (SUPER_POP = 0) and including block-by-treatment interactions (BLOCK_FE = 0). The team deemed the resulting impact estimates as statistically significant or marginally significant if the estimated *p*-value for the coefficient fell below 5 or 10 percent, respectively, based on a two-tailed hypothesis test. To help interpret the magnitude of the impact estimates, the study team also included in the report estimates of the standardized mean difference in outcomes (effect sizes) as calculated by *RCT-YES*.

Impacts on secondary outcomes

As an additional exploratory analysis, the study team estimated impacts on three groups of secondary outcomes: (1) the 10 individual survey questions that make up the summary knowledge index included in the main body of the report, (2) an additional measure of sexual risk behavior, and (3) three alternative measures of youth risk behavior (cigarette, alcohol, and marijuana use).

The results of this exploratory analysis corroborate the overall substantive findings presented in the main body of the report (Table A.6). For the individual knowledge questions, the secondary impact findings showed that boys in the *Wise Guys* group were more likely than boys in the control group to provide a correct response for 4 of the 10 questions. For these four questions, the magnitude of the impact ranged from 5 to 10 percentage points. For the additional measures of risk behaviors, the impacts were small and not statistically significant. Boys in both research groups were unlikely to report having had more than one sexual partner. In addition, boys in both research groups had an equal likelihood to report smoking cigarettes, drinking alcohol, or using marijuana in the past 30 days.

Table A.6. Impacts on secondary outcomes

Measure	*Wise Guys* group	Control group	Impact	Effect size
Knowledge				
Correctly answered question on: (%)				
Condoms and risk of pregnancy	69	66	3	0.07
Condoms and risk of getting HIV	52	42	10*	0.20
Birth control pills and risk of pregnancy	58	54	3	0.07
Birth control pills and risk of getting HIV	49	51	-2	-0.05
Deciding if someone has HIV by looking at them	66	63	3	0.06
Female-to-male transmission of HIV when condoms are used	89	84	5+	0.14
Risk of getting HIV from people you know well	71	68	3	0.06
Protective methods against HIV	48	41	7+	0.15
Risk of pregnant woman with HIV passing it to her newborn baby	72	66	6+	0.13
Getting STIs from oral sex	78	74	4	0.10
Sexual risk behavior				
Had more than one sexual partner (%)	6	5	1	0.05

TABLE A.6 (CONTINUED)

Measure	*Wise Guys*	Control	Impact	Effect size
Other risk behaviors				
Smoked in the past 30 days (%)	4	3	1	0.03
Drank alcohol in the past 30 days (%)	11	10	1	0.03
Used marijuana in the past 30 days (%)	9	10	-1	-0.04
Sample size	372	291		

Sources: Baseline and two-year follow-up surveys conducted by Mathematica Policy Research.

Notes: The numbers in the columns labeled *Wise Guys* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

HIV = human immunodeficiency virus; STI = sexually transmitted infection.

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